

## IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method for decoding a signal, comprising:
  - determining prior probabilities associated with an encoded input signal;
  - performing iterative decoding on said encoded input signal, using said prior probabilities, to estimate a codeword associated with said encoded input signal, said codeword being within a base cell of an underlying lattice, wherein said encoded input signal is coded with a code having at least one constituent code, and wherein performing iterative decoding includes exchanging information between a plurality of constituent decoders during at least two iterative cycles when said encoded input signal includes multiple constituent codes; and
  - determining a cell translation associated with said encoded input signal based on said codeword.
2. (Original) The method of claim 1, further comprising:
  - mapping said codeword to an appropriate cell of said underlying lattice using said cell translation.
3. (Original) The method of claim 1, wherein:
  - said encoded input signal is coded with a multilevel coset code.
4. (Original) The method of claim 1, wherein:
  - said encoded input signal is coded with a lattice code.
5. (Currently Amended) The method of claim 1, wherein:
  - ~~said encoded input signal is coded with a code having at least one constituent code; and~~
  - determining prior probabilities includes determining a probability that a first coordinate of a first constituent code has a predetermined value, based on said encoded input signal.

6. (Original) The method of claim 1, wherein:

said encoded input signal has been modified by an interferer; and

determining prior probabilities includes determining probabilities based upon statistics associated with said interferer.

7. (Original) The method of claim 6, wherein:

said statistics associated with said interferer are known.

8. (Original) The method of claim 6, wherein:

determining prior probabilities includes assuming statistics for said interferer for use in determining said probabilities.

9. (Original) The method of claim 8, wherein:

assuming statistics includes assuming that said interferer is uniformly distributed within a Voronoi cell of a lattice.

10. (Original) The method of claim 9, wherein:

assuming statistics includes assuming that said Voronoi cell is a ball.

11. (Original) The method of claim 1, wherein performing iterative decoding includes:

performing a first decoding iteration, using said prior probabilities, to generate first information; and

performing a second decoding iteration, using said first information, to generate second information.

12. (Currently Amended) A method for decoding a signal, comprising:

determining prior probabilities associated with an encoded input signal;

performing iterative decoding on said encoded input signal, using said prior probabilities,  
to estimate a codeword associated with said encoded input signal, said codeword being within a

base cell of an underlying lattice The method of claim 1, wherein [[:]]) performing iterative decoding includes exchanging information between a plurality of constituent decoders; and determining a cell translation associated with said encoded input signal based on said codeword.

13. (Original) The method of claim 12, wherein:

exchanging information between a plurality of constituent decoders includes exchanging extrinsic information.

14. (Currently Amended) A decoding system comprising:

a prior probability generator to generate prior probabilities associated with an encoded input signal;

an iterative decoding unit to determine a codeword associated with said encoded input signal by iterative decoding using said prior probabilities, said codeword being within a base cell of an underlying lattice, wherein said iterative decoding unit includes a plurality of constituent decoders, and wherein said constituent decoders are configured to exchanging information among said constituent decoders during said iterative decoding; and

a translation determination unit to determine a cell translation associated with said encoded input signal based on said codeword.

15. (Original) The decoding system of claim 14, further comprising:

a cell mapping unit to map said codeword to an appropriate cell of said underlying lattice using said cell translation.

16. (Original) The decoding system of claim 14, wherein:

said encoded input signal is coded with a multilevel coset code.

17. (Original) The decoding system of claim 14, wherein:

said encoded input signal is coded with a lattice code.

18. (Currently Amended) The decoding system of claim 14, wherein:

~~said iterative decoding unit includes multiple constituent decoders are configured to decode constituent codes of said encoded input signal.~~

19. (Currently Amended) A decoding system comprising:

a prior probability generator to generate prior probabilities associated with an encoded input signal;

an iterative decoding unit to determine a codeword associated with said encoded input signal by iterative decoding using said prior probabilities, said codeword being within a base cell of an underlying lattice, said iterative decoding unit including multiple constituent decoders to decode constituent codes of said encoded input signal ~~The decoding system of claim 18, wherein [[::]] said constituent decoders are configured to exchange soft information between one another during said iterative decoding; and~~

a translation determination unit to determine a cell translation associated with said encoded input signal based on said codeword.

20. (Currently Amended) The decoding system of claim 18, wherein:

~~said iterative decoding unit includes at least one constituent decoder that of said constituent decoders is an iterative decoder.~~

21. (Currently Amended) The decoding system of claim 18, wherein:

~~said iterative decoding unit includes at least one constituent decoder that is a soft in, soft out (SISO) decoder.~~

22. (Original) The decoding system of claim 14, wherein:

~~said prior probability generator generates said prior probabilities based on known statistics associated with an interferer.~~

23. (Original) The decoding system of claim 14, wherein:

said prior probability generator assumes statistics for an interferer and generates said prior probabilities based on said assumed statistics.

24. (Original) The decoding system of claim 23, wherein:

said prior probability generator assumes that said interferer is uniformly distributed within a Voronoi cell of a lattice.

25. (Original) The decoding system of claim 24, wherein:

said prior probability generator assumes that said Voronoi cell is a ball.

26. (Original) The decoding system of claim 23, wherein:

said prior probability generator assumes that said interferer has a Gaussian distribution with zero mean and unknown variance.

27. (Currently Amended) An article comprising machine-accessible media having associated data, wherein the data, when accessed, results in a machine that performs a method for decoding a signal, said method comprising:

determining prior probabilities associated with an encoded input signal;

performing iterative decoding on said encoded input signal, using said prior probabilities, to estimate a codeword associated with said encoded input signal, said codeword being within a base cell of an underlying lattice, wherein said encoded input signal is coded with a code having at least one constituent code, and wherein performing iterative decoding includes exchanging information between a plurality of constituent decoders during at least two iterative cycles when said encoded input signal includes multiple constituent codes; and

determining a cell translation associated with said encoded input signal based on said codeword.

28. (Original) The article of claim 27, wherein said method further comprises:

mapping said codeword to an appropriate cell of said underlying lattice using said cell translation.

29. (Original) The article of claim 27, wherein:

    said encoded input signal is coded with a multilevel coset code.

30. (Original) The article of claim 27, wherein:

    said encoded input signal is coded with a lattice code.

31. (Currently Amended) An article comprising machine-accessible media having associated data, wherein the data, when accessed, results in a machine that performs a method for decoding a signal, said method comprising:

determining prior probabilities associated with an encoded input signal;  
    performing iterative decoding on said encoded input signal, using said prior probabilities,  
    to estimate a codeword associated with said encoded input signal, said codeword being within a  
    base cell of an underlying lattice ~~The article of claim 27, wherein [[:]] performing iterative~~  
    decoding includes exchanging information between a plurality of constituent decoders; and  
    determining a cell translation associated with said encoded input signal based on said  
codeword.

32. (Original) The article of claim 31, wherein:

    exchanging information includes exchanging extrinsic information between a plurality of constituent decoders.